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Overhauling counterproliferation☆

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Abstract

The United States should undertake a complete overhaul of all of its policies and programs to counter weapons of mass destruction (WMD) in state and non-state hands. Such an overhaul would encompass intelligence collection and analysis, the new Department of Homeland Security, and the Pentagon's military transformation. The successful Nunn-Lugar program would be expanded worldwide, and the WMD arms control regimes would undergo a needed revision. There are no benefits to an overhaul of the US nuclear posture. So far, the US has not undertaken the needed overhauls.
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1. The need for an overhaul of counterproliferation

President Bush has rightly proclaimed that keeping the worst weapons—weapons of mass destruction (WMD)—out of the worst hands—state or non-state actors inclined to use them—is the highest security priority of our time. The policy response to this imperative, however, has been feeble in both the United States and around the world. One would have thought that the logical response to 9/11 would have been a comprehensive reassessment of the world's available counters to proliferation of WMD to state and non-state parties, but no such overhaul was undertaken. The US government has correctly identified the objective, but must commit to the means of achieving this goal.

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To be sure, there have been overhauls of parts of the US government in response to 9/11, with some changes—though not all—constructive. A truly global coalition took the offensive against al Qaeda and other Islamic extremist terrorists, with great effect. A restructuring of the FBI, intended to redirect it from strictly solving terrorist crimes to preventing future terrorist attacks, is seemingly underway. As a result, the redirected FBI domestic counterterrorism effort is ideally supposed to be coupled with the CIA's foreign intelligence in new ways through the "Terrorism Threat Integration Center" announced in President Bush's State of the Union Address in January 2003, at long last bridging the false divide between "domestic" and "foreign" intelligence. A new cabinet Department of Homeland Security has been created, the first mission-oriented restructuring of the federal bureaucracy since the founding of the Department of Energy, and the most wide-ranging since the reorganization of the national security establishment following World War II. The new Department focuses the immigration, border control, airline security, and emergency response arms of the federal government on countering terrorism. There has been a radical rethinking of US policy toward the Middle East, but the results are not yet in. There has been a reevaluation by the United States and its allies of their respective relationships, mostly to the detriment of all.

What is remarkable about the post-9/11 response is how little of the reaction has been centered on WMD. The most conspicuous action the US government took after 9/11, to fulfill President Bush's commitment to keeping the worst weapons out of the hands of the worst people, was to conduct a preemptive war on Iraq's chemical and biological weapon programs. This effort was necessary to prevent a reversion over time to these programs previous level of malignant activity, since fatigue would inevitably have set in to the international community's efforts at inspections and sanctions, assuming these measures could have even been effective at containing Iraq's programs. But however justified, the war in Iraq involved the application of one tool—the last resort of preemptive military force—in one place, Iraq. There has been no international coalition to corral all the wherewithal of WMD terrorism globally—most importantly, nuclear weapons and fissile material—akin to the coalition against al Qaeda. There has not yet been a reckoning with the evident fact that intelligence on Saddam Hussein's chemical and biological arsenals at the very least differed markedly from what was found immediately after the war.

The Department of Homeland Security, despite its title and stated goal, remains the amalgam of its diverse constituent bureaucracies rather than an engine of innovative policy. Its primary focus has been on conventional terrorism, not WMD. Ironically, the preoccupation with preemption in Iraq has left the agenda of international cooperation against WMD—export controls and arms control—in the same imperfect state in which it was found before 9/11.

In the face of this feeble overall response to the WMD threat, North Korea and Iran are boldly moving forward with large-scale nuclear weapon programs, next to which Iraq's chemical and biological weapons' ambitions appear to pale in significance. The plutonium and highly enriched uranium made by these governments in coming years will be a threat to humanity not only in their hands, but for

generations to come (the half-life of plutonium 239 is 24,000 years; that of uranium 235, 317 million years). Perhaps more disturbing is that it is impossible to know into whose hands these materials will fall in the future as proliferation to states and non-states is now inextricably linked in the post-9/11 world. Today, a proliferation and counterterrorism disaster of enormous proportions, and a massive failure of US security policy, is in the making.

Had the world taken the ideal path from 9/11 to President Bush's imperative, what would the overhaul of counter-WMD policies have been? What should we do now to get back on the direct path?

2. No single tool will suffice

Preemption, while an important and effective option, is a last resort and can hardly qualify as a general solution or doctrine since it is suitable for so few of the relevant cases. Proliferation of WMD to states and sub-state terrorists is a complex and varied phenomenon. It therefore calls for a policy approach that is multi-faceted. The stakes are great enough that no option can be ignored.

For one thing, "worst weapons" come in degrees. Chemical weapons are not much worse, pound-for-pound or gallon-for-gallon, than ordinary explosives, and deserve only the adjective "bad," not "worst." Current protective technologies are largely effective against chemical weapons. Biological weapons are more fearsome than chemical weapons and becoming more so as advances in technology make the "old" types of bioweapons, like anthrax, accessible through small-scale cottage industry fabrication that small groups of deviants—even individuals—can muster. Meanwhile, advanced bioscience will eventually engineer new germs that are resistant to vaccines and antibiotics. The key to security against this type of "worst" weapon is public health detection and quick response, since bioagents take time to spread and kill. If detected early, protective and curative measures can counter them effectively.

While time and medicine are effective responses to biological weapons; they are not effective against a nuclear detonation. It has a deadly finality that puts a premium on prevention before the fact, not response after the fact. Nature has been kind to our preventive efforts since nuclear weapons are made from two metals, plutonium and enriched uranium, which do not occur in nature. These materials must be man-made, and it turns out that in both cases, the process of making them is comparatively expensive and difficult to conceal. To date, accomplishing production of these metals has only been within the reach of governments, not terrorist groups. The key to nuclear security is therefore to ensure that no more governments make fissile materials, and that those governments that do make them keep them out of the hands of terrorists.

The concept of "worst people" in President Bush's formulation contains similar complexities. Terrorists are easy and obvious to include. Both organized and well-funded groups like al Qaeda, as well as small splinter groups of super-extremists and cults fall into this category. As the destructive power of technology is increasingly available to smaller and smaller groups, individuals motivated by rage must be included in the category of potential WMD terrorists. For example, the

perpetrator of the anthrax mailings of October 2001 might very well have been a lone individual. The Aum Shinrikyo cult in Japan has already used sarin in the Tokyo subway and has attempted the release of anthrax spores.

A discussion of governments brings even more complexity. The most obvious category is the so-called "rogue states" that seem determined to obtain nuclear weapons with the clear aim of posing a direct threat to the United States and its interests. North Korea and Iran decidedly fill this bill today. They must be the object of intense US-led international pressure to prevent them from producing enriched uranium or plutonium and, failing that, military force that preempts their ambitions.

But what about countries such as Ukraine, Kazakstan, South Africa, Argentina, Brazil, Taiwan, South Korea, and a host of other nations that might today be nuclear powers—and thus potential providers of "loose nukes" for terrorists as well as a danger in themselves—but were turned back as the result of US-led efforts throughout the 1980s and 1990s? These efforts included addressing their legitimate security concerns through alliances and security agreements, denying them technology to make nuclear weapons, and applying the weight of international opprobrium against the further spread of nuclear weapons embodied in the Nuclear Nonproliferation Treaty. Without this effort, these borderline cases might easily have ended up in the "worst" category.

A third category is represented by all the other nearly 200 countries on the globe that have not made and are not currently seeking to make nuclear weapons. Powerful leading nations like Germany, Turkey, and Japan—far from rogues—have not gone nuclear despite their clear technical ability to do so. This fact should not be taken for granted. Our policy against WMD must include continuing to dissuade the great bulk of nations from resorting to this extreme. Doing so means maintaining stable and reliable alliances that these nations can depend upon (not just "coalitions of the willing"), and using US power to create an international climate of security and justice.

These examples illustrate the many faces of the WMD problem but should also suggest the many different means we have to combat them. The spectrum of available tools spans dissuasion, prevention, diplomacy, arms control, denial of access to critical technology and materials, defenses, deterrence and, yes, even preemption. However, all of these tools need to be buttressed with solid intelligence.

The US should have used the wake-up call of 9/11 as an occasion to take inventory of all its available options for combating WMD rather than committing to a single solution and geography—preemptive action in Iraq—however necessary that might have been. A thorough review at that time would have put the US in a far more enviable security position today instead of playing a game of "catch-up."

3. Overhauling WMD intelligence: the specter of policymaking in the dark

No policy instruments—neither preemption, nor arms control, nor missile defense, nor interdiction—can be effective if the existence and nature of WMD efforts are unknown or imprecise.

Secretary of Defense Donald Rumsfeld became convinced, in the course of his work on ballistic missile proliferation before he took office, that adequate intelligence on WMD programs is unlikely to be present in most cases. Given the stakes, he concluded, the US must assume the worst in formulating its policy responses. This logic, encapsulated in the maxim "absence of evidence [of WMD] is not evidence of absence," was the main intellectual argument in the influential Rumsfeld Commission report leading to the deployment of a National Missile Defense [1]. According to this maxim, intelligence regarding the timetable for the development of an intercontinental ballistic missile threat originating in Iran or North Korea was uncertain enough that it was deemed insufficient for the United States to be prepared to deploy a missile defense within a few years (the Clinton administration policy), but instead necessary to undertake deployment immediately. Later, when Rumsfeld became Secretary of Defense, this same logic led the United States to preemptive war in Iraq: Better to assume Saddam Hussein was fulfilling his long-demonstrated quest for WMD than to interpret the scanty intelligence available as evidence of a scanty WMD program (especially in view of Iraq's persistent and obvious concealment and deception efforts). At the time of this writing, no evidence has been found that corroborates WMD activities of the scale and scope that were widely suspected to be taking place in Iraq before the war. This disturbing circumstance underscores both the difficulty and importance of obtaining good intelligence on WMD.

WMD activities are inherently difficult to monitor. It is comparatively easy to monitor the size and disposition of armies, the numbers and types of conventional weaponry like tanks and aircraft, and even the operational doctrines and plans of military establishments (since these generally need to be rehearsed to be effective, and exercises and training can be monitored). By their nature, WMD concentrate destructive power in small packages and tight groups. Both the manufacturing of chemical and biological weapons can take place in small-scale facilities. The plutonium route to nuclear weapons requires reactors and reprocessing facilities that are large and relatively conspicuous, but the uranium route can be pursued in facilities that are modest in size and lack distinctive tell-tale external features.

A profound question bearing upon all the counter-WMD tools is, therefore, whether adequate intelligence is likely to be available to make any of them effective; or, alternatively, whether the spread of WMD is, by its nature, too difficult to monitor. If the latter is true, the world is doomed to a perpetual situation reminiscent of the "missile gap" of the 1950s, where uncertainties outweigh certainties and policymaking is forced into worst-case scenario mode. The uncertainties of the 1950s missile gap were substantially dispelled by the invention of satellite reconnaissance, thus making the Soviet Union's missile silo construction and flight tests visible from space.[1] Today, there are some emerging intelligence technologies

[1] Less often appreciated is that the Soviet Union also conducted these activities, in the main, openly and in strictly regimented patterns. Where the Soviet Union wished to practice deception, such as in its biological weapon programs, it was largely successful. Satellite reconnaissance also depended on the Soviet Union's cooperation in an essential respect: maintaining the openness of space and the right of uncontested US overflight of its territory.

that have the potential to make a substantial contribution to the collection of quality intelligence on WMD. They are ''close-in'' technologies as opposed to ''from-the-outside-looking-in'' like satellite photography.

Many of these counterproliferation intelligence technologies can be considered to be forensic in nature. They involve, for example, taking material samples and analyzing them for traces of suspicious chemicals, biological material, or radionuclides. The samples can be taken from the air by aircraft (as with krypton 80 air sampling for evidence of spent nuclear fuel reprocessing) or from the ground (plucking a leaf from a bush, wiping a handkerchief across a countertop), overtly or covertly. From a distance, the spectrum of light transmitted through an effluent plume downwind of a smokestack or backscattered from a laser might reveal something about the chemical composition of the plume and thus the activities underway within the building.

Unattended ground sensors (UGS) with a variety of transducers (chemical, acoustic, seismic, radio-frequency, imaging, etc.) can be emplaced by hand or dropped covertly from unmanned aerial vehicles (UAVs). The UGS can have enough onboard data processing capability to require only low-bandwidth exfiltration of their data back to intelligence agencies. Because of its low bandwidth, this communication can, in turn, be made very difficult for the nation being spied upon to detect. Cellular telephone technology permits clusters of UGS to be networked. By correlating the data from several networked UGS in space and time, it is possible to increase the detection rate without a corresponding increase in the rate of false alarms. UGS can even be made mobile by attaching them to robots, animals, or birds.

Another lucrative technique is ''tagging,'' involving the covert placement of identifying features, transmitters, or chemical markers on objects destined for WMD laboratories or other facilities, and then monitoring the tag remotely.

Finally, there is a revolution underway in close-in signals intelligence, in which cell phones, laptop computers, local area networks, and other information infrastructure of a WMD program are penetrated and exploited.

Miniaturization, as with micro-electro-mechanical (MEMS) devices, is making such close-in techniques easier. Ultimately, nanotechnology will make further miniaturization possible. Because their use involves a covert dimension, these techniques are more highly classified than the techniques used for verifying superpower arms control agreements. Information from these specialized WMD-specific techniques can be combined with the usual types of intelligence from intercepted communications, defectors, open-source scientific literature, and the occasional spy.

Unfortunately, no technology is in the offing that holds the promise of lifting the veil of WMD activities the way satellite photography lifted the veil from the Soviet Union's nuclear missile and bomber programs. Accurate intelligence on WMD would therefore be enhanced by two additional ingredients that are matters of policy, not technology.

One ingredient is active cooperation by the parties under surveillance. Just as the Soviet Union allowed overflight of its territory by satellites, governments around the world will have to allow greater access to their territory, facilities, and scientists if there is to be any kind of accurate underpinning of counterproliferation. At a

minimum, governments that wish to avoid suspicion (and thus coercion and even preemptive attack) will need to allow the kind of access promised to UN inspectors in Iraq before the 2003 war. Access involves the ability to inspect facilities by surprise, take material samples for forensic analysis, install monitoring equipment, and other physical means. It must be complemented by required data declarations, document searches, and interviews of scientists. These are tall orders, since they involve compromises with sovereignty and legitimate military secrecy for the nations inspected, but they are the only way North Korea's WMD ambitions will be verifiably eliminated or Iran's nuclear power activities fully safeguarded.

The accompanying ingredient must be the shifting of the burden of proof from the international community to the party under suspicion. To make an inspection system of carefully managed, if not totally unfettered, access based on active cooperation succeed, it must be the responsibility of the inspected party to dispel concerns, and not the responsibility of the United States or the international community to "prove" that dangerous WMD activities are underway.

4. A coalition against WMD terrorism

While an important focus, the US-led coalition against terrorism formed after 9/11 has been directed almost single mindedly against al Qaeda and other Islamic fundamentalist terrorists. A parallel coalition aimed at WMD terrorism should have been spearheaded by the United States after 9/11, one that capitalized on the widespread awareness of potential danger following the attacks on the United States. The United States missed a major opportunity to transform counterproliferation while it had the attention and sympathies of the international community.

Such a global coalition against WMD terrorism was in fact proposed by Senator Richard Lugar and former Senator Sam Nunn as the logical extension of the Nunn-ugar program, which successfully eliminated or safeguarded much of the former Soviet Union's WMD. Rather than seeking out and neutralizing cells of al Qaeda terrorists, the proposed coalition against WMD terrorism would aim to eliminate all unsafeguarded "cells" fissile material. It would also aspire to garnering a global membership, since all governments should share a deep common interest in preventing WMD from falling into non-governmental hands.

The report of a conference sponsored by the Nuclear Threat Initiative described the intended activities of such a coalition [2]. For nuclear terrorism, the cooperative activities of the global coalition would include:

- establishing common, world-class standards for inventory control, safety, and security for weapons and weapon-usable materials, standards of the kind worked out between Russia and the United States in the Nunn-Lugar program.
- establishing progressively stronger standards of transparency, to demonstrate to others that standards are being met.
- providing assistance to those who need help meeting the coalition's standards.
- cooperating to provide effective border and export controls regarding nuclear materials.

- devising cooperative procedures to find and regain control of bombs or fissile materials if they are lost or seized by terrorists. One possibility is a coalition version of the US Department of Energy's Nuclear Emergency Search Team (NEST)—a "global NEST." Another possibility is to agree to facilitate deployment of national NEST teams in the way that many nations deploy canine search teams to earthquake sites to search for survivors.
- planning and researching cooperative responses to a nuclear or radiological explosion, such as mapping the contaminated area, addressing mass casualties, administering public health measures like iodine pills, and cleaning up contaminated soil.
- cooperating on forensic radiochemical techniques to find the source of a nuclear incident from its residue.

For bioterrorism, Nunn and Lugar envisioned the following coalition activities:

- Establish common, world-class techniques for safeguarding biological materials in preparation, handling, and scientific use.
- Develop public health surveillance methods on a global scale to detect an incident of bioterrorism in its early stages. Such methods would also provide important benefits in combating infectious disease and improving global public health.
- Shape normative standards for the conduct of scientific practice in the area of biotechnology and microbiology, including the possibility of making it a universal crime, punishable under national laws, to make or assist the making of bioweapons.
- Cooperate in research on diagnosis, prophylaxis (e.g., vaccines against bioagents), and treatment (e.g., antibiotics and antivirals).
- Cooperate in developing protective techniques like inhalation masks and filtered ventilation systems.
- Cooperate in developing techniques for decontaminating buildings that have been attacked (as was needed in the Hart Senate Office Building after anthrax-contaminated mail was sent there).
- Cooperate in forensic techniques for identifying the perpetrators of a bioattack (as was needed in the analysis of the anthrax mailings in the United States).

While much of the momentum behind US diplomacy in the wake of 9/11 has dissipated with the passage of time and the distraction of the war in Iraq, it is not too late for the United States to attempt to create a new framework for international cooperative action against WMD: a global coalition against WMD terrorism.

5. WMD and homeland security

Besides striking at Islamic terrorists worldwide, the other main US response to 9/11 has been the creation of a White House Office of Homeland Security (OHS) and a new Department of Homeland Security (DHS). In 1958, the shock of the Soviet launch of Sputnik led to the creation of the President's Science Advisory

Committee, the Defense Advanced Research Projects Agency, the National Reconnaissance Office, and the National Aeronautics and Space Administration. These institutions spurred new technologies, techniques, and policies to counter the Soviet strategic threat. By contrast, a comparable spurt of innovative energy does not seem likely from the OHS and DHS, especially with respect to the worst type of terrorism—WMD terrorism.

The inattention to WMD is apparent in the fledgling DHS. Its organization chart contains no overall office devoted to WMD terrorism, even though this is the most dangerous kind of terrorism. To date, the majority of DHS' energy has apparently been spent merging the different traditions and bureaucracies of its constituent parts. Mostly, these constituents are concerned with airline security, border control, and emergency response, not WMD. Some small offices concerned with WMD have been transferred to the new Department from other agencies, but they reside in a tiny Science and Technology Undersecretariat that disposes of only 2% of the DHS budget. There is no evidence today that this new bureaucracy, heralded as the most revolutionary governmental reconfiguration since the late 1940s, aims to revolutionize counterproliferation.

Meanwhile, bureaucratic exertions associated with the new Department have entirely eclipsed the White House OHS. OHS is supposed to orchestrate the investments of the major departments that already have responsibility and technical capability in WMD—DHS, DOD, the Department of Energy, the Department of Health and Human Services, the Intelligence Community, and others—to create new capabilities, new strategies, and new technologies for counterproliferation [3]. The absence of a strong White House hand, which is a consequence of the withering of OHS, will cause these departments to revert to fitting countering WMD in at the margins of their traditional activities.

6. Counterproliferation in the Pentagon

In addition to DHS, the Department of Defense also has important capabilities and responsibilities for countering WMD, especially for the development of new technology. The term "counterproliferation" was in fact coined by former Secretary of Defense, Les Aspin, to signify that contending with WMD was an important DOD mission in the post-Cold War world [4]. In the 1990s, a number of counterproliferation programs were created within DOD to try to focus research, development, and acquisition on producing non-nuclear counters to WMD on the battlefield. Over time, the programs were expanded to protecting rear areas—ports and airfields in the theater of war—against chemical and biological weapons attack. Subsequently, the technologies for protecting allied rear areas were recognized to be applicable to protection of the US homeland from WMD attack. Thus, by 9/11, DOD was recognized as a lead agency in the US for developing and fielding technology for countering WMD wielded by both state and non-state actors, both on foreign battlefields and on US territory. However, DOD's counterproliferation programs remained small and fragmented. The great bulk of DOD's

post-Cold War investments in new technology ignored WMD. Under the 1990s slogan "revolution in military affairs," most of the innovative thinking and spending in DOD was directed at perfecting conventional joint military operations.

Surprisingly little changed for counterproliferation in DOD after 9/11. Secretary of Defense Donald Rumsfeld has proclaimed "transformation" to be the successor to "revolution in military affairs." But the core of the effort remains long-range precision attack, close integration of intelligence information with operations, and closer working together of Army, Navy, and Air Force units in joint operations. These worthy transformation goals have not been matched by any comparable counter-WMD emphasis. DOD's counterproliferation programs remain small and scattered. Excluding missile defense, these programs amount to only a few billion out of the $400 billion defense budget, far too small a fraction given the importance of the mission.

7. US nuclear weapons programs

An important question for counterproliferation is whether or not US deployment of and doctrine for its own nuclear arsenal influence the spread of WMD elsewhere in the world. For the most part, the influence is marginal. It is unlikely that Pyongyang's or Teheran's calculations, let alone al Qaeda's, are significantly dependent on whether the United States has 6000, 3500, or 2200 deployed strategic weapons (the numbers permitted under the last three rounds of US-Russian nuclear arms control), whether it retains tactical nuclear weapons deployed in Europe, researches or develops earth-penetrating or other new types of nuclear weapons, or has a doctrine that either threatens or foreswears nuclear retaliation if chemical or biological weapons are used against the US or its allies. The fear that the United States would or could use nuclear weapons against them if they used WMD is a useful component of deterrence against proliferating governments. But the United States has another tool of deterrence besides nuclear weapons: its unmatched conventional military power. Terrorists, for their part, are likely not deterred by threats of punishment at all.

On the other hand, countering North Korean and Iranian WMD ambitions can be assisted with the support of the international community. Defeating al Qaeda absolutely depends upon cooperation by foreign governments in intelligence and law enforcement; in this area a unilateral option is not available. International support for the US-led efforts against WMD is influenced—again perhaps only at the margin—by US nuclear policy. To the extent that the United States suggests a growing reliance of its own on nuclear weapons for security, it makes the job of marshaling international cooperation in a coalition against WMD terrorism or an overhaul of WMD arms control more difficult. These marginal costs of emphasizing the role of US nuclear weapons in its own security should therefore be weighed against the marginal benefits of modification of the US nuclear posture.

Recently, the United States embarked on three changes that do not meet this test. One adjustment has been to combine nuclear weapons, missile defenses, and

long-range conventional weapons into a "new Triad," replacing the traditional nuclear "Triad" of land-based missiles, submarine-based missiles, and strategic bombers. This construct accomplishes little in practice, but it has the detrimental and misleading effect of suggesting to the outside world that US presidents will regard use of nuclear weapons and use of conventional weapons as differing only in degree rather than in kind.

Another change with little obvious benefit is to accelerate the schedule for the resumption of underground nuclear testing. The new schedule allows weapon scientists to test at the earliest time they can be ready to gather useful data from the detonation. Given the stakes involved, the primary driver of the schedule for resuming underground testing should be military necessity, and on this score, the case for the change has not been made.

The third important modification is to embark on research and development of a new type of earth-penetrating nuclear warhead, ostensibly to destroy deeply buried WMD facilities. Again, the military rationale for this move is not strong, since the United States already has earth-penetrating nuclear weapons and the focus on munitions begs the larger question of finding such targets in the first place. The political enormity (and much of the fallout contamination) of a decision to cross the nuclear divide would not be dramatically reduced by changing the design of the nuclear weapon. Consistent with the other proposed changes, the benefit of this innovation in US nuclear programs is negligible.

The optimal US military strategy would be to widen and prolong the huge gap between US conventional military capabilities and those of any other nation, and to use transformational technology to narrow the range of circumstances in which this nation would resort to use of nuclear weapons.

8. Strengthening the role of arms control

Another important and accessible tool is arms control establishments such as the Nuclear Nonproliferation Treaty (NPT), the Chemical Weapons Convention (CWC), and the Biological Weapons Convention (BWC). These are sometimes disparaged since it is widely assumed the "rogues" ignore them with impunity (since they have inadequate verification and enforcement provisions) and the "good" countries are generally unaffected by them. This contention is wrong for two reasons.

First, the world does not consist of clearly "rogue" and "good" states in regard to proliferation behavior: there is a substantial "in-between" category. This group has been represented over time by Ukraine, Kazakstan, and Belarus (which chose to forsake the nuclear weapons they inherited from the Soviet Union); Argentina and Brazil (which mutually agreed to give up their nuclear programs); Taiwan and South Korea (which chose US protection over nuclear weapons); and South Africa (which changed regimes and thus its sense of external threat). In all these cases, the allure of greater international acceptance if they abandoned their nuclear ambitions was one of the deciding factors.

Second, it is important to note that these agreements are, in fact, useful even in dealing with the rogues, in an indirect way. When it becomes necessary for the

United States to lead action against the rogues, the international consensus against WMD embodied in the NPT, CWC, and BWC provides the framework for the United States to marshal the support of other nations in confronting the rogue.

While it is important to recognize that their provisions are far from perfect, these arms control structures are not without value. Moreover, their provisions can and should be strengthened, and the US can play a pivotal role in doing so.

One problem affecting the NPT is the dual use of nuclear technology. The "peaceful atom," dating to the 1960s when the NPT was negotiated, constitutes a huge loophole in the regime that must be closed. Non-nuclear states are today permitted by the NPT to have closed nuclear fuel cycles. They may enrich uranium to make reactor fuel, and they may reprocess spent reactor fuel to extract plutonium—provided they declare their activities to the IAEA and allow the IAEA to confirm the declaration. But possession of enrichment and reprocessing facilities positions a country perilously close to achieving nuclear weapons capability. Iran is an important case in point. In the name of a peaceful nuclear power program, Iran has proposed to enrich uranium and reprocess spent fuel. In the future, non-nuclear weapon states should be compelled to import enriched fuel from supplier states and ship spent fuel back to the suppliers, foregoing both enrichment and reprocessing. In return, the supplying nations would be obligated to provide fuel services on an economically fair basis, which will invariably be cheaper for the importer than building its own facilities.

The verification and enforcement provisions of the arms control agreements should also be strengthened. This initiative, like the task of improving intelligence, will not be an easy one given the inherent ease with which WMD programs can be concealed. Inspections required by arms control agreements can serve as sources of better intelligence.

Arms control plays a limited role in the counterproliferation toolbox. But in this it is not different from all the other tools. Each tool has its limitations, but also its place.

9. Conclusion: overhaul counterproliferation before it's too late

Immediately following 9/11, and in debates that continue today, the United States greatly regretted that it had not taken steps to overhaul its counterterrorism capabilities years earlier, steps that seemed tragically obvious after the World Trade Center towers were gone. While President Bush has clearly stated the most crucial security objective of our time—keeping the worst weapons out of the hands of the worst people—actions speak louder than words. Today, the United States finds itself no more prepared to keep WMD out of hostile hands, either nation-states or terrorists, than it was prior to 9/11. A thorough rethinking and subsequent transformation of counterproliferation must become the number one priority now. We will not have the luxury of time for reflection on this matter later if the need for it is made tragically obvious by an incident of mass destruction.

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